(12) UK Patent Application (19) GB (11) 2 340 336 (13) A

(43) Date of A Publication 16.02.2000

(21) Application No 9816705.9

(22) Date of Filing 01.08.1998

(51) INT CL[7]
H04M 3/42 1/00

(52) UK CL (Edition R)
H4K KF42

(56) Documents Cited
JP 100013961 A

(58) Field of Search
UK CL (Edition Q) H4K KBS KF42 KF50A KOC , H4L LDPP LECX
INT CL[6] H04M 1/00 3/42 3/50 , H04Q 7/22 7/32 7/38
ONLINE:WPI;EPODOC;JAPIO

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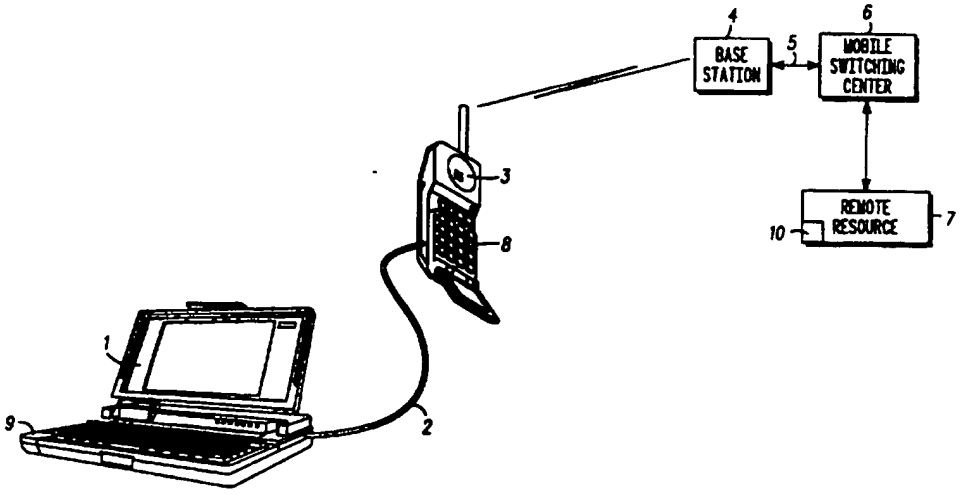
(54) Abstract Title
A virtual local environment in a communications system

(57) A system for creating a virtual local environment for a mobile subscriber provides an Internet connection by means of a computer terminal (1) and mobile telephone (3) (or a fixed telephone) whereby information specific to the subscriber's current location can be accessed automatically. A subscriber location signal transmitted from the mobile network's base station (4) is linked via an API (9) to a browser where it automatically becomes a search key word. Search engine software at the remote resource (7) performs a match according to distance from the subscriber's location and selects the appropriate information for relaying back to the terminal (1), such as information on local hotels, restaurants etc.



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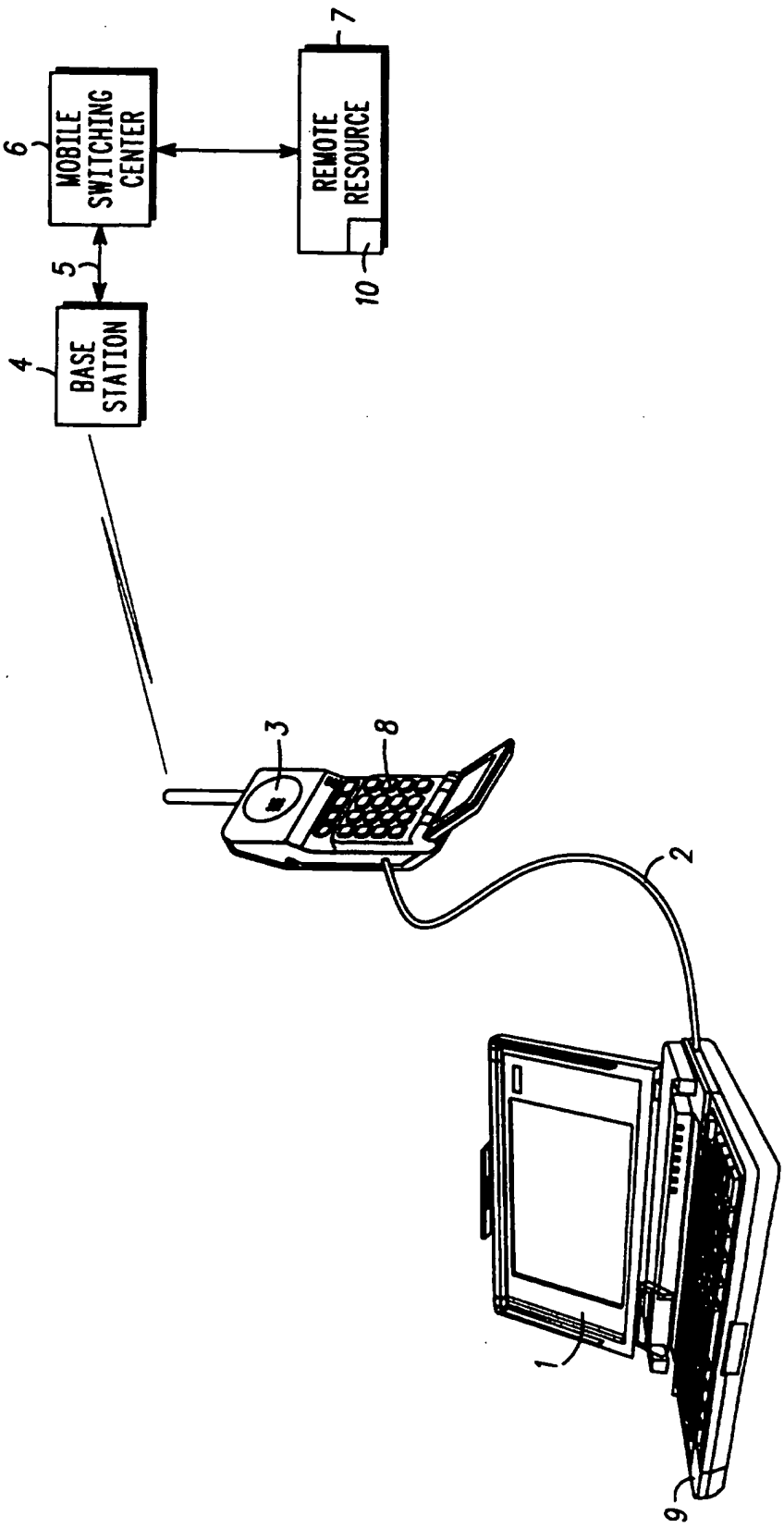
At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.


MOBILE SWITCHING CENTER
REMOTE RESOURCE
BASE STATION
1
2
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A VIRTUAL LOCAL ENVIRONMENT IN A COMMUNICATIONS SYSTEM

This invention relates to a system and method for accessing information from a resource, such as the Internet, by a mobile subscriber.

It is known for a subscriber to be provided with a business and personal communication environment via public or private telecommunications networks (electronic mail, Internet and Intranet, for example).

However, a mobile subscriber will, from time to time, want to gain access to local information (i.e. information relating to his immediate temporary location) without necessarily knowing or needing to know who would be providing it. Such information could comprise, for example, the whereabouts of hotels, restaurants, hospitals, leisure facilities, etc within, say, a radius of 10 miles of his current location.

This invention aims to provide a means for creating a "virtual local environment" for a mobile subscriber.

According to a first aspect of the present invention, a system for enabling a subscriber to access information, specific to his locality, from a remote resource comprises:

- a subscriber communications unit including means for recording data relating to the subscriber's location,

- a user interface module including means for generating a subscriber location address message for transmission to the remote resource, and receiving means for receiving from the remote resource, information specific to the subscriber locality.

According to a second aspect of the invention, a method for enabling a subscriber to access information specific to his locality from a remote resource comprises the steps of:

- recording data relating to the subscriber's location;
- generating a subscriber location address message;
- transmitting the subscriber location address message to the remote resource;
- and receiving from the remote resource, information specific to the subscriber locality.

The subscriber communications unit may comprise, for example, a mobile or fixed telephone handset, an "intelligent phone" or a radio modem.

The user interface module may be incorporated in the subscriber communications unit.

Alternatively, the user interface module may form part of a PDA ("personal digital assistant"), computer terminal or similar device which includes the necessary software for accessing resources such as the Internet. The PDA or computer terminal may for example include a keyboard and/or a speech recognition facility.

A communications link between a telephone handset and a computer terminal may be established by any conventional means such as a hard wire or infra-red link.

In the case where a mobile telephone is employed, data relating to the location of the subscriber may be provided to the handset and over an air interface from its controlling base station. Further, the location address

message and location specific information from the remote resource may be relayed, at least in part, over an air interface.

In the case where a fixed telephone handset is employed, location information may be provided by the telephone services network at the socket which is connected via a land line to a public switched telephone network.

As a further alternative, a global positioning system (GPS) receiver, co-located with the communications unit could be used to determine location.

The means for recording information relating to the subscriber's locality and received from a telephone network by the handset may comprise simple logic circuitry.

This information, when transmitted from the handset to the interface module is then used by the interface module to generate a location address message. The means for generating this address may comprise an applications programming interface (API).

Preferably, the remote resource is also equipped with an API for enabling it to select the relevant information for relaying back to the subscriber via the telephone handset, such information being dependant upon the address message that the remote resource receives.

By virtue of the invention, in addition to general access to the Internet, a mobile multi-media subscriber has access to a virtual local environment (VLE).

An embodiment of the invention will now be described, by way of example only, with respect to the drawing which is a schematic diagram of a system for creating a virtual local environment in accordance with the invention.

In the Figure, a lap-top computer terminal 1 is connected by a wire link 2 to a mobile telephone 3. Both the terminal 1 and telephone 3 are operated by and located together with a subscriber. The mobile telephone 3 communicates over an air interface with its serving base station 4. The base station 4 is connected via land line 5 to a mobile switching centre 6 which in turn, is linked to a remote resource 7 such as an Internet server. Such an arrangement as this, as so far described, is known.

Further, and in accordance with the invention, the mobile telephone 3 is provided with a memory 8 for recording its locality. Information relating to its locality is provided by transmissions from the base station 4 whose geographical position and area of coverage (commonly referred to as "cell" in a mobile cellular communications system) are known. Also, in accordance with the invention, the lap-top computer terminal 1 includes a first API 9 for receiving the recorded locality from the mobile telephone 3 and in response, generating a location address message for transmission (via the mobile telephone 3, the base station 4 and the mobile switching centre 6) to the remote resource 7.

The remote resource 7 is additionally provided, according to an optional feature of the invention, with a second API 10 for enabling it to access that information available which is specific to the locality of the subscriber.

The VLE may be based on a web browser and Internet search engine technology in a suitably modified form. For instance, it ranks information according to the distance of the referred information from the subscriber's known position plus other key words are entered. Thus, if the network knows that the subscriber is located at a particular hotel, then it would respond with information on the hotel's restaurant and other facilities, then, say filling stations in nearby streets, then shopping facilities in the vicinity, then theatres or restaurants in the city and so on. In order to shorten the browsing process, key words can also be entered (e.g.

"theatres") or selected from a menu which may itself be adaptive according to the location. Responses to the key word would be ranked as before according to distance.

The subscriber's procedure is as follows. He selects "local" in his browser and is then presented with default immediate local information including his present location, plus the relevant menu to help him define his search. In a refinement of the invention, the subscriber is able to search ahead in locations where he expects to be in the future.

Accordingly, search engine techniques are used to locate and rank information which is already on the Internet. The facility could be provided by a specialist Value Added Service provider in partnership with the subscriber's normal Service provider.

An example of the method of operation is as follows. The base station 4 signals to the mobile telephone 3 its location (e.g. location co-ordinates of the serving cell). When the subscriber has selected "VLE" in the browser, the first API 9 links the location information to the browser where it automatically becomes a search keyword and is sent via the network (4, 5, 6) to a modified search engine. This modified search engine software forms a match on local facilities from information supplied on the Internet, ranked according to radial distance between the subscriber's location and location of the facility described. It then sends "default local information" to the subscriber. The subscriber then selects the desired page from the search result. The browser software enables the subscriber to automatically send a selected keyword from a menu linked to the local co-ordinates (e.g. "restaurant" + "local"). Alternatively, he can automatically send local co-ordinates plus his own keyword or select a radial distance over which a search should be carried out. The modified search engine performs a ranked match as before.

Necessarily, the creators of Internet information must add the location of the service or facility described. This is done using the second API 10 for Internet authoring software which invites the author to incorporate the applicable location co-ordinates in the keyword descriptor of this service or information which they are promoting.

In order to make the insertion of location co-ordinates for a local facility easy, automated means are proposed. One such proposal is a set of web page maps provided by the VLE Service provider.

The author would call up the relevant map, identify the location required, "click" a pointer on the computer terminal screen, whereby a hyper-link would tag the hidden co-ordinates to the author's descriptor. The same web based maps could be used by subscribers wishing to look ahead for local information relating to a future location that they are proposing to travel to.

While the above embodiment has been described in the context of a mobile communications system, it is to be understood that the invention is not restricted to network of this type but is applicable to any network which supports multi-media and mobility including the future proposed fixed network, since in this case, the location of telephone sockets is known and can be signalled to the handset.

CLAIMS

1. A system for enabling a subscriber to access information, specific to his locality, from a remote source, the system comprising:

a subscriber communications unit including means for recording data relating to the subscriber's location,

a user interface module including means for generating a subscriber location address message for transmission to the remote resource, and receiving means for receiving from the remote resource information specific to the subscriber locality.

2. A system according to Claim 1 and further including a remote resource provided with an applications programming interface for enabling selection of information specific to the subscriber's locality.

3. A system according to either preceding Claim in which the means for generating a subscriber location address message comprises an application programming interface.

4. A system according to any preceding Claim in which the subscriber communications unit comprises a mobile telephone.

5. A system according to any of Claims 1 to 3 in which the subscriber communications unit comprises a radio modem.

6. A system according to any of Claims 1 to 5 in which the user interface module is incorporated in the subscriber communications unit.

7. A system according to any of Claims 1 to 5 in which the user interface module forms part of a personal digital assistant.

8. A system according to any of Claims 1 to 5 in which the user interface module forms part of a computer terminal.

9. A method for enabling a subscriber to access information specific to his locality, from a remote resource, the method comprising the steps of:

recording data relating to the subscriber's location;
generating a subscriber location address message;
transmitting the subscriber location address message to the remote resource;
and receiving from the remote resource, information specific to the subscriber.

10. A system for enabling a subscriber to access information specific to his locality from a remote resource as hereinbefore described reference to the drawing.

11. A method for enabling a subscriber to access information specific to his locality from a remote resource, said method being substantially as hereinbefore described with reference to the drawing.

The Patent Office

INVESTOR IN PEOPLE

Application No: GB 9816705.9 **Examiner:** Richard Howe
Claims searched: 1-11 **Date of search:** 14 January 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): H4K (KOC, KF42, KBS, KF50A) ; H4L (LDPP, LECX)

Int Cl (Ed.6): H04M (1/00, 3/42, 3/50); H04Q (7/22, 7/32, 7/38)

Other: ONLINE : WPI; EPODOC; JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	JP10013961 A (Fujitsu) - see abstract	1-4,6,8,9

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.